RTCA DIGEST

February 2001 NUMBER 139

INSIDE

Future Flight Data Collection Committee Offers An Interim Report

The RTCA Future Flight Data Collection Committee (FFDCC) held its fourth plenary session on January 11, 2000. One of the more important agenda items addressed by the committee was the review and approval of an interim report as required by the Terms of Reference. The report, which describes the committee's deliberations within six months of its inception, will be delivered to the FAA and NTSB.

The Committee, co-chaired by Mr. David Downey of the FAA and Mr. James Cash of the NTSB, has established three working groups. Working Group 1, Data Needs, is co-chaired by Ms. Erin Gormley of the NTSB and Mr. Tim Logan of Northwest Airlines. Working Group 2 is co-chaired by Mr. Dan Martinec of ARINC and Mr. Steve Van Trees of the FAA and is focused on technology issues. Data Use & Protection is the title of Working Group 3 and is co-chaired by Mr. Tommy McFall of American Airlines and Dr. Tom Longridge of the FAA.

Working Group 1 is compiling the data needs and parameter identification, including information such as:

- Data Consumers: accident investigators, manufacturers, operators, ATC operators, regulators, maintainers
- Parameters: parameter identification, environments, systems, data flexibility, data documentation, latency, standardization of format, etc.
- Regulatory Issues: ICAO Standards and Recommended Practices (SARPS), JAR OPS requirements, EUROCAE Standards, FAA regulations, etc.

Working Group 2 is considering all technical aspects of aircraft condition monitoring as well as the methods for local storage, remote storage, information transfer within and outside the airplane, real-time monitoring and real-time analysis. The impact of implementing these capabilities must also be considered as part of the activity.

Working Group 3, Data Use & Protection, will build on the lessons learned during the development of a Notice of Proposed Rulemaking for Flight Operations and Quality Assurance (FOQA).

The FAA has asked this Committee to provide recommendations regarding several NTSB recommendations dealing with cockpit video recording. The Committee has taken this request under advisement and will appropriately address the issues in the final report.

The interim report will be made available on the RTCA web site at www.rtca.org. The Committee expects to issue its final report in October 2001.

The next meeting of the Future Flight Data Collection Committee will be held on March 29, 2001 in the RTCA offices. The working groups will all meet on March 28th.

Newly formed Special Committee 198, NEXCOM, will hold its first meeting on February 22-23, 2001. For more information visit www.rtca.org or call RTCA.

Program Management Committee

The Program Management Committee approved six new documents and two changes to current documents at its meeting on December 14, 2000. These new documents and changes are listed on page 8 of the *Digest*.

Special Committee 192, National Airspace Review, completed its work program with the delivery of DO-266, *Government and Industry Guidelines and Concepts for NAS Analysis and Redesign*. SC-192 is now retired. Coordination is underway to initiate a new Special Committee to address airspace issues.

Special Committee 159, GPS, continues its work on a Department of Transportation (DOT) request for reports on GPS/Ultra Wide Band (UWB) interference. The PMC approved SC-159's status update to DOT on the second interim report that will incorporate input from Johns Hopkins and Stanford Universities and is expected to be complete in February 2001.

A request to extend Special Committee 187, Mode S Airborne Beacon, was approved. SC-187 will remain in place until March 2001 to complete MOPS changes necessitated by ICAO SARPs updates.

The PMC also discussed several other new Special Committee activities:

- Special Committee 160, 406 MHz Emergency Locator Transmitters, was approved for reactivation to consider a proposed change to DO-204, *MOPS for 406 MHz Emergency Locator Transmitters*. The National Oceanic and Atmospheric Administration has requested the change to harmonize the document with a Cospas-Sarsat decision to open a new channel on 406.028.

- Initiation of proposed Special Committee 197, Nickel-Cadmium and Lead-Acid Batteries, is pending, awaiting identification of an appropriate industry chairman. Discussions with industry indicate that there would be more interest if the committee focus were shifted to rechargeable and starting batteries. The PMC approved the change in focus for this proposed committee.

- A new Special Committee to update DO-214, *Audio Systems Characteristics and MOPS for Aircraft Audio Systems and Equipment*, was proposed. A proposed chairman has been identified and Terms of Reference (TOR) for this committee are being developed. The PMC will consider establishing this committee when the TOR is complete.

- The FAA has requested a new Special Committee for Next Generation Communications (NEXCOM). The PMC asked that the TOR be revised to include development of a report that documents actions taken in response to the recommendations of the RTCA Chairman's Committee on NEXCOM. The PMC approved formation of the committee (SC-198). Industry co-chairs will be Mr. Abe Jaafar, Delta Air Lines, and Mr. Karl Grundmann, NASA.

Chairman: Bill Jeffers, ARINC
Secretary: Jerry G. Bryant, RTCA, Inc.

RTCA Welcomes...

NEW MEMBERS

Universal Avionics Systems Corporation, AZ: Tucson, AZ; Universal Avionics Systems Corporation, AZ is a leading manufacturer of flight management, terrain avoidance and ancillary avionics systems. Representative: Rolland Sicard

Dynon Development, Inc.: Woodenville, WA; Dynon Development deals with the development of a computer based aircraft instrumentation system and the design and development of electronic instrumentation for robotic aircraft. Representative: Ms. Gillian Torode

RTCA welcomes our newest members and their designated RTCA representatives. We look forward to their participation in RTCA activities. If you would like membership information for your organization, please contact Kenisha Dickerson at RTCA. Phone: (202) 833-9339; Fax: (202) 833-9434; e-mail: kdickerson@rtca.org.

Visit ***www.rtca.org*** *for updates about RTCA's*
Spring Forum
ADS-B: Expanding the Safety Envelope
Washington, DC

Capstone – An FAA Investment in Safety

Pat Poe
Alaskan Regional Administrator
Federal Aviation Administration

At the outset, I want to thank RTCA for this chance to share some FAA Alaskan Region experiences and accomplishments. As a scene setter, it is important to know that Alaska has a tremendous number of: pilots – one of every fifty-eight people in the state; airplanes – six for every ten pilots; aircraft accidents (average) – one every other day for the past decade; aircraft fatalities (average) – one every nine days for the past decade. Of the commercial pilots that spend their thirty-year career flying in Alaska, over eleven percent will perish in their aircraft – and not alone. Alaska is a state where many children go to school every day by air and during parts of the year, most of the state is accessible only by air. Aviation is the primary transportation system – not of choice but by necessity.

When there is talk of new technology and the opportunity to be at the forward edge demonstrating safety benefits, you will find Alaska's aviation community and FAA's Alaskan Region ready to play a part. There are many examples; the Capstone Program described below is but one.

Making history sounds like a bold statement, but the world's first operational IFR surveillance system based on ADS-B began service from the FAA's ATC Center in Anchorage to the Yukon/Kuskokwim (Y/K) Delta on January 1, 2001. Capstone equipped aircraft are able to receive ATC services using radar separation standards in the absence of radar.

Capstone is truly a creation reflecting the collective will of the aviation community to work with the FAA and demonstrate ADS-B technologies that impact directly some primary causes of aircraft accidents in Alaska. Capstone was first funded two years ago. While begun in Alaska, Capstone has had broad support from many FAA sectors including Safe Flight 21.

ADS-B equipped aircraft have already flown thousands of hours in the 100,000 square miles of Western Alaska's Y/K Delta. Currently about 80 aircraft have in-cockpit color and moving map displays which illustrate terrain hazards, highlight the existence of similarly equipped aircraft, and bring weather data and graphics to the display through the UAT data-link. Another 70 aircraft are in line to be equipped. Immediate location data for each aircraft provides a tremendous benefit for search and rescue operations in a hostile environment where many survive the accident but not the event. Under FAA contract, the University of Alaska is providing pilot training and performing an independent evaluation of Capstone impact in Alaska.

FAA Administrator Jane Garvey becomes acquainted with Capstone equipment in an Alaska-based Cessna 185.

The next steps for the Capstone Program include a demonstration site in Southeast Alaska and the possible merging of ADS-B with other technologies such as WAAS and ASDE-X. One thing is for sure, whatever happens next in Capstone will be possible only through the collective efforts of industry, the user community and with FAA commitment.

You are invited to monitor Capstone progress and plans at http://www.alaska.faa.gov/capstone.

Free Flight Steering Committee

Attention Special Committee Members
Starting March 1, 2001, you will receive meeting agendas and summaries via **email.**

The Free Flight Steering Commitee met December 13, 2000, to consider two new Free Flight Documents and to review updates on Safe Flight 21, Primary En Route Radar, and the National Airspace System Operational Evolution Plan.

Steering Committee members were provided with advance copies of the new documents for discussion at the December 13th meeting:

- *National Airspace System Concept of Operations*
- *Addendum 4: Free Flight Phase 2*

The Concept of Operations document updates and supersedes the previously published document titled, *Government/ Industry Operational Concept for the Evolution of Free Flight, Edition 2*. The new concept document is intended for use by the FAA and the user community to coordinate activities related to the development and implementation of operational capabilities within the National Airspace System. Addendum 4 provides detail for the Free Flight Phase 2 recommendations made to the Steering Committee in 1999. This document recommends implementation strategies for certain controller tools and identifies priority research and development initiatives. Addendum 4 also includes operational scenarios that describe capability use from different user perspectives. The Free Flight Steering Committee concurred in the publication of these two documents.

The FAA, in response to a Free Flight Steering Committee recommendation for a focused management approach for Safe Flight 21 (SF21), reported formation of a SF21 Strategic Support Group (SFSSG). The group is composed of FAA and air traffic union representatives and will meet monthly. On a quarterly basis, the SFSSG will provide program status updates to the FAA Associate Administrators.

An update on the FAA's Primary En Route Radar Restructuring Program was presented. The restructuring plan will potentially decommission 62 radars and is expected to begin in FY 02. The plan has two phases that span a four to eight year period. Radars needed by non-FAA agencies will remain in service. The FAA will operate and sustain those radars needed by other agencies for a limited time until transition and/or funding agreements are put in place.

The Department of Transportation has established the need for a technology/procedural roadmap to provide direction over the next ten years for the evolution of the National Airspace System. MITRE/ CAASD presented v0.5 of the National Airspace System Operational Evolution plan that has been developed in conjunction with the FAA. The plan is based on recommendations that have been made by the aviation community and is intended to integrate a number of ongoing activities. Problem and solution sets are identified and mapped to projects planned between now and 2010.

The Free Flight Steering Committee established its meeting schedule for 2001 with the following dates: April 11th, August 8th and December 5th.

Chairman: Robert Baker, American Airlines
Secretary: Jerry G. Bryant, RTCA, Inc.

Night Vision Goggle (NVG) Appliances and Equipment (SC-196)

During the sixth meeting of SC-196 on January 8-10, 2001, the committee approved the document, *Concept of Operations – Night Vision Imaging System for Civil Operators.* This document will be considered for approval in March by the RTCA PMC. The committee's Working Groups (WG-2 – Night Vision Goggles Minimum Performance; WG-3 – Night Vision Imaging System Installation Minimum Performance – Lighting; and WG-4 – Maintenance and Serviceability of Equipment) are addressing the many issues remaining to complete the MOPS for Night Vision Imaging System Equipment. The committee expects to review a final draft by May 2001. The Training Guidelines document is being developed by WG-5 – Training Guidelines and Other Considerations. The Training Guidelines document will be the focus of the February meeting and is targeted for completion by September 2001. Individuals interested in participating in the committee are asked to visit the RTCA web site or contact Hal Moses at RTCA.

Next meeting: February 13-14, 2001, HAI Convention, Orange County Ballroom # 3, Anahiem Marriott, Anahiem, CA.

Co-chairpersons: Lorry Faber, FAA; Jim Winkel, Litton Electro-Optical Systems
Program Director: Harold Moses, RTCA, Inc.

VHF Air-Ground Communications (SC-172)

The SC-172 Plenary met on December 5-7, 2000. Activity involved normal administrative issues with emphasis on the Working Group 2 and 3 tasks.

WG-2 Report: Seven working papers were reviewed. Topics addressed included ICAO SARPs Technical Manual deficiencies and Link Margins for Long Range VDL Communications. Mr. Farroha's paper addressed 11 SARPs issues. Mr. Arisha's paper identified 10 issues to be corrected and 12 issues where SARPs Technical Manual and ARINC Specification 631 differ but no action is needed in either document. WG-2 recommended that the consensus developed as a result of reviewing these papers be presented to ICAO AMCP WG-M for consideration.

Mr. Morgenstern presented a paper proposing correction to two deficiencies in DO-224A. Mr. Nagowski reported that WG-2 would continue to work on proposed revisions to DO-224A. Work is expected to be complete in about a year. These continuing refinements were anticipated when DO-224A was published.

WG-3 Report: WG-3 reviewed *Minimum Operational Performance Standards for Aircraft VDL Mode 2 Physical, Link and Network Layer (Version 1.1)*. WG-3 plans to conduct a complete review of the MOPS in February 2001, to conduct the Document Comment Form process in August 2001 and to publish the VDL Mode 2 MOPS in the last quarter of 2001.

A similar WG-3 review of *Minimum Operational Performance Standards for Aircraft VDL Mode 3 Transceiver Operating in the Frequency Range 117.975-137.000 MHz (Version 4)* led to plans for a complete review of the MOPS in February 2001, to conduct the Document Comment Form process in May 2001 and to publish the VDL Mode 3 MOPS in the third quarter of 2001.

The next meeting for SC-172 is scheduled for February 27-March 1, 2001.

Chairman: Bill Stine, National Business Aviation Association
Program Director:
Rudy Ruana, RTCA, Inc.

High Frequency Data Link (HFDL) (SC-188)

Special Committee 188 met in a one-day plenary session on January 18, 2001. Mr. Robert Renoud of ARINC was introduced as the new SC-188 Chairman following the retirement of USAF Colonel Roger Robichaux. SC-188's primary remaining task is the creation of an HFDL MASPS.

Mr. Pickens reported that SC-188/WG-1 has been meeting with SC-165/WG-3 over the past year to develop SATCOM MASPS which will also serve as a template for the HFDL MASPS now under development. At the SC-188/WG-1 meeting held in November 2000, it was concluded that the SATCOM MASPS were sufficiently mature to begin development of the HFDL MASPS. Scott Beale has made preliminary, draft HFDL MASPS contributions. Ms. Suzanne Cullen will be the industry editor.

Mr. Renoud reported that the next ICAO WG-F meetings to continue working on the globalization of HFDL frequencies are scheduled for Lima, Peru in March 2001 and Bangkok, Thailand in November 2001. Mr. Wendel reported that Continental Airlines is working with NAV Canada to accept HFDL for the Automatic Dependent Surveillance Air Traffic Services application.

The next SC-188 Plenary will be scheduled following the SC-188/WG-1 meeting now scheduled for March 22, 2001.

Chairman: Robert Renoud, ARINC
Program Director:
Rudy Ruana, RTCA, Inc.

New this month!

Check out the RTCA *Digest* online at
www.rtca.org.

Environmental Conditions and Test Procedures (SC-135)

SC-135 met on December 14, 2000 and approved changes to RTCA DO-160D, Section 16 – Power Input and Section 18 – Audio Frequency Conducted Susceptibility. Several issues required additional review by EUROCAE WG-14. While agreement in principle was reached, WG-14 will meet on January 23-24, 2001, to complete the coordination and approval. If approved, the revised Sections will be forwarded to the RTCA PMC for review/approval at the March 2001 meeting. SC-135 is reviewing the status of the remaining test sections and in October will consider starting work on a DO-160E version of the document.

The next SC-135 meeting is scheduled for October 2-3, 2001.

Chairman:
Mike Kroeger, Honeywell International, Inc.
Program Director:
Harold Moses, RTCA, Inc.

Continued from page 8

DO-266, Government and Industry Guidelines and Concepts for NAS Analysis and Redesign
Issued 12-14-00 • Prepared by SC-192
This document consists of three volumes. "Volume I: User Priorities for the National Airspace Redesign" is a summary of user comments from six recent meetings held throughout the United States. "Volume II: High Altitude Airspace Concept" defines how one segment of the NAS could provide more of the freedoms described in the Free Flight Concept while permitting transparent operation for aircraft entering from and leaving to adjacent airspace. "Volume III: Recommendations on Special Use Airspace in National Airspace Redesign" identifies known types of airspace users and describes how each of the current and future users is affected by special use airspace. It includes a vision of the future airspace system and the role special use airspace will play in the future NAS.

Change 1 to DO-160D, Environmental Conditions and Test Procedures for Airborne Equipment
Issued 12-14-00 • Prepared by SC-135
This change provides revised text for Section 8.0 – Vibration, Section 20.0 – Radio Frequency Susceptibility (Radiated and Conducted) and Appendix C – Change Coordinators.

Change 1 to DO-210D, Minimum Operational Performance Standards (MOPS) for Geosynchronous Orbit Aeronautical Mobile Satellite Services (AMSS) Avionics
Issued 12-14-00 • Prepared by SC-165
Electromagnetic Compatibility (EMC) issues existed which required resolution to ease the process of issuing a FAA Technical Standard Order (TSO) implementing DO-210D. This change addresses those EMC issues.

RTCA Calendar of Events

February

1-2 **SC-159,** Rooms N, A, C & R
1 **ICAO GPS Spectrum SG** Room C
1 **SC-159/WG-1** Rooms N & A
1 **SC-159/WG-4 (Authors Group),** Room S
1 **SC-159/WG-5,** Room R
1 **SC-159 Ad Hoc,** Room S
2 **ICAO GPS Spectrum SG** Room C
2 **SC-159 Plenary** Rooms N & A
5-7 **SC-186/WG-4** L3 site, Pheonix, AZ
6-7 **SC-186/WG-1** L3 site, Pheonix, AZ
6-8 **SC-165/WG-3,** Room N
8 **SC-186 Plenary** L3 site, Pheonix, AZ
8 **RTCA Policy Board** Room C
13-14 **SC-196 Plenary** HAI Convention, Anahiem Marriott, Anahiem, CA
13-14 **Certification Select Committee/WGs,** Closed, Rooms A, C & R
20-22 **SC-165/WG-1/AEEC Air/ Ground Subcommittee** Honeywell, Phoenix, AZ
22-23 **SC-198,** All rooms
Feb 27-March 1 **SC-172,** Rooms N & A

March

1 **SC-187 Plenary,** Room R
1-2 **SC-172,** Rooms N & A
1-2 **SC-159/WG-6,** Room C
6-7 **SC-195,** Rooms N & A
8 **Free Flight Select Committee,** Closed, Room C
12,13,15 **SC-194,** Rooms N, A, C & R
14 **SC-194,** Rooms N, A & R
19-20 **Certification Select Committee/WGs** Closed, Rooms N, A & C
20-22 **SC-165/WG-3 Plenary** Room R
23 **Certification Steering Committee,** FAA
27 **Program Management Committee,** Rooms N & A
28 **FFDCC WG-1, WG-2 & WG-3,** Rooms N & A
29 **FFDCC Plenary** Rooms N & A

April

2-6 **SC-189 Plenary (tentative)** Rooms N, A & R
5 **RTCA Policy Board** Room C
24-25 **SC-165/WG-3 Plenary** Room R
April 30-May 4 **DO-178B training classes** Room R

KEY

Room S = Small Conf. Room

Room N = Fred B. McIntosh Conf. Room sponsored by NBAA

Room A = Ray Hilton Conf. Room sponsored by Air Transport Association

Room C = Frank J. Colson Board Room

Room R = Rohde & Schwarz Conf. Room

Unless otherwise specified, all meetings will be held at RTCA, Inc., Suite 1020, 1140 Connecticut Avenue, N.W., Washington, DC 20036 USA. Phone: (202) 833-9339. Fax: (202) 833-9434. Internet: www.rtca.org.

The information in this calendar is deemed to be reliable as of the date of publication, but is not guaranteed and is subject to change. Please contact RTCA for confirmation of details. All RTCA meetings are open to the public and free of charge, except where otherwise indicated.

Visit our web site at www.rtca.org for current schedules of SC meetings, WG meetings and other upcoming events. If you have any problems or questions, contact Hillary Ross at RTCA (hross@rtca.org).

ACRONYMS

ADS-B	Automatic Dependent Surveillance - Broadcast
AMCP	Aeronautical Mobile Communications Panel
ASDE	Airport Surface Detection Equipment
ATC	Air Traffic Control
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
NTSB	National Transportation Safety Board
SARPs	Standard and Recommended Practices
SATCOM	Satellite Voice and Data Communications
UAT	Universal Access Transceiver
VDL	VHF Data Link
VHF	Very High Frequency
WAAS	Wide Area Augmentation System (NGSS)

NEW DOCUMENTS AVAILABLE

National Airspace System Concept of Operations
Issued 12-13-00 • Supersedes Government/Industry Operational Concept for the Evolution of Free Flight, Edition 2
Approved by the Free Flight Steering Committee
This publication is an update that supersedes the previously published *Government/ Industry Operational Concept for the Evolution of Free Flight, Edition 2*. This document is intended as a guide for the FAA and user community to coordinate development and implementation activities for air traffic services and operational capabilities within the NAS. The evolution of capabilities for three timeframes is described:

- Near Term, through 2005
- Mid Term, 2005 – 2010
- Far Term, 2010 – 2015

Concepts are discussed from environmental, airspace user, and service provider perspectives for all phases of flight. The concept will serve as a living document and will be the subject of regular review and updates to reflect changes in FAA and user strategy.

National Airspace System Concept of Operations Addendum 4: Free Flight Phase 2
Issued 12-13-00
Approved by the Free Flight Steering Committee
Addendum 4 provides detail for the Free Flight Phase 2 recommendations made to the Free Flight Steering Committee in December 1999. Implementation strategies are recommended for TMA, URET, pFAST, and CPDLC and the recommendation for CDM is refined. Priority research and development initiatives are identified as well as the need for a high altitude airspace structure to accommodate more Free Flight activity. Operational scenarios are included. Appendix B of this publication documents the issues and problem-based analyses used to develop the FFP2 recommendations, and summarizes the capabilities recommended for the 2003-2005 period.

DO-261, NAVSTAR GPS L5 Signal Specification
Issued 12-14-00 • Prepared by SC-159
This Specification defines the requirements related to the signal interface between the Space Segment (SS) of the Global Positioning System (GPS) and the GPS Navigation Users for the L5 Navigation Signal.

DO-262, Minimum Operational Performance Standards for Avionics Supporting Next Generation Satellite Systems (NGSS)
Issued 12-14-00 • Prepared by SC-165
This document contains MOPS for avionics that provide Aeronautical Mobile Satellite (R) System (AMS(R)S) services by means of satellite communications technologies scheduled to become operational after the year 2000. To comply with the minimum requirements of this document, an NGSS applicant is required to submit information regarding the technical characteristics of the NGSS. The technology specific technical requirements for each such system will become normative attachments to this document. It is anticipated that such technology specific attachments will be added to this document as the particular NGSS becomes operational for AMS(R)S.

DO-263, Application of Airborne Conflict Management: Detection, Prevention, & Resolution
Issued 12-14-00 • Prepared by SC-186
This document presents an operational concept for the Application of Airborne Conflict Management (ACM) using Automatic Dependent Surveillance-Broadcast (ADS-B). The ACM concept includes detecting conflicts, monitoring for potential conflicts and suggesting resolutions to prevent a violation of airspace separation criteria against all other properly equipped aircraft/vehicles. ACM is a core enabling function for the global implementation of the Free Flight concept, as it will aid pilots to fly user-preferred trajectories while avoiding conflicts with other aircraft.

DO-264, Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications
Issued 12-14-00 • Prepared by SC-189
This document provides guidance material intended for stakeholders and approval authorities involved in the operational implementation of the provision and use of air traffic services (ATS) supported by data communications. These communication services include those such as communication management and clearances; navigation services such as flight planning, required navigation performance (RNP) monitoring and gross navigation error (GNE) prevention and detection; surveillance services such as position and intent reporting; and services that support ATM automation.

DO-265, Minimum Operational Performance Standards for Aeronautical Mobile High Frequency Data Link (HFDL)
Issued 12-14-00 • Prepared by SC-188
This document encompasses standards and descriptions of a system configuration including Ground Sub-networks; HF Data Link Sub-networks, of which the aircraft is one part; and aircraft Sub-networks. However, the specified MOPS in this document address only the aircraft HF Data Link Sub-network function.

Continued on page 6

Document Ordering Information
Place your order: To order an RTCA document, please contact Charleen Blankenship at RTCA. Phone: (202) 833-9339; fax: (202) 833-9434; email: cblankenship@rtca.org.

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